We Claim:

1. A device for making up a plurality of optical fibers, comprising:

a multifiber drawing machine having a drawing installation and a take-up winder;

said drawing installation being configured to synchronously produce a plurality of individual optical fibers, and said drawing installation being configured to provide a drawing rate for drawing the plurality of individual optical fibers such that the drawing rate is substantially constant and substantially identical for each of the optical fibers;

said take-up winder having a take-up spool and a compensating device;

said take-up spool taking up the optical fibers; and

said compensating device being configured such that, when the optical fibers have respective different speeds at said drawing installation and at said take-up spool, said compensating device compensates for differences in speed between said drawing installation and said take-up spool.

2. The device according to claim 1, wherein said drawing installation is configured to bring the optical fibers together and to form a fiber bundle from the optical fibers.

3. The device according to claim 2, wherein said take-up winder has a fiber guiding unit configured to continuously lay the fiber bundle on said take-up spool.

4. The device according to claim 3, wherein:

said fiber guiding unit has at least one controllable excursion mechanism and a fiber guide with a guiding roller for laying the fiber bundle over the take-up spool; and

said at least one controllable excursion mechanism acts on said fiber guide.

5. The device according to claim 4, wherein said take-up winder has a layer-compensating device configured to adapt said fiber guiding unit to at least one winding condition selected from the group consisting of a change in a wound-up radius on said take-up spool and a change in a winding width for layers of the optical fibers on said take-up spool.

6. The device according to claim 5, wherein:

said layer-compensating device has at least one controllable excursion mechanism for controlling a traveling displacement of at least one element selected from the group consisting of said fiber guide and said guiding roller; and

said at least one controllable excursion mechanism controlling the traveling displacement in dependence on a number of layers of the optical fibers on said take-up spool such that the traveling displacement is controlled in at least one direction selected from the group consisting of a direction substantially parallel to an axis of rotation of said take-up spool and a direction substantially radial with respect to the axis of rotation of said take-up spool.

7. The device according to claim 2, wherein said compensating device has a speed-change compensating device for compensating a change in speed of the fiber bundle wound in layers onto said take-up spool, said speed-change compensating device is configured to compensate a change in speed in at least one situation selected from the group consisting of a change in speed of the fiber bundle when changing from one of the layers to another one of the layers and a change in speed of the fiber bundle resulting from a changing wound-up radius of different ones of the layers on said take-up spool.

8. The device according to claim 7, wherein:

said speed-change compensating device has a dancing arm fastened at a mounting point; and

a deflection roller for guiding the fiber bundle is rotatably fastened to said dancing arm such that said deflection roller is held on one side of said dancing arm and such that said deflection roller is pivotable about the mounting point of said dancing arm in a plane substantially parallel to a plane of rotation of said take-up spool.

9. The device according to claim 8, wherein said deflection roller and said take-up spool have respective axes of rotation substantially parallel to one another.

10. The device according claim 8, wherein said deflection roller is held on said dancing arm such that said deflection roller, in addition to performing a pivoting movement about the mounting point of said dancing arm, can oscillate with respect to the pivoting movement.

11. The device according to claim 10, wherein said dancing arm is an elastic arm including an elastic material with a given modulus of elasticity such that said deflection roller fastened thereto has a given oscillating capability.

12. The device according to claim 11, wherein said dancing arm is a plastic arm.

13. The device according to claim 10, wherein said dancing arm has at least one property selected from the group consisting of a given material thickness and a given shape such that said deflection roller fastened thereto has a given oscillating capability.

14. The device according to claim 8, including:

an angular resolver, said dancing arm being assigned to said angular resolver at said mounting point; and

a speed controller operatively connected to said angular resolver, said angular resolver transmitting data on angles of rotation to said speed controller for controlling a take-up rate of said take-up spool.

15. The device according to claim 5, including:

a central data processing unit operatively connected to at least one of said compensating device and said layer-compensating device; and

said central data processing unit controlling at least one of said compensating device for compensating for differences in speeds and said layer-compensating device for adapting said fiber guiding unit.

16. The device according to claim 8, wherein said dancing arm has an equilibrium position and is configured to be acted upon by a compensating force such that said dancing arm is adjustable to the equilibrium position by the compensating force when drawing the optical fibers and taking up the fiber bundle on said take-up spool.

17. The device according to claim 16, including a cylinder operatively connected to said dancing arm for providing the compensating force, said cylinder being selected from the group consisting of a pneumatic cylinder and a hydraulic cylinder.

18. The device according to claim 8, wherein said dancing arm has a neutral position and is configured to be acted upon by a compensating force such that said dancing arm is adjustable to the neutral position by the compensating force in case of an interruption or abnormal termination of the drawing and the taking up of the plurality of optical fibers.

19. The device according to claim 18, including a cylinder operatively connected to said dancing arm for providing the compensating force, said cylinder being selected from the group consisting of a pneumatic cylinder and a hydraulic cylinder.

20. The device according to claim 8, wherein said dancing arm is configured to set a tension in the fiber bundle.

21. The device according to claim 20, including a cylinder operatively connected to said dancing arm for setting the tension in the fiber bundle, said cylinder being selected from the group consisting of an adjustable pneumatic cylinder and an adjustable hydraulic cylinder.

22. The device according to claim 1, wherein said take-up spool is fastened as an exchangeable take-up spool.

23. The device according to claim 3, wherein:

said take-up spool has a spool axis and is an exchangeable take-up spool to be exchanged when full; and

a replacement spool is placed adjacent to said take-up spool in a direction of the spool axis and is moved under said fiber

guiding unit for laying the fiber bundle on said replacement spool.

24. The device according to claim 3, wherein:

said take-up spool has a spool axis and is an exchangeable take-up spool to be exchanged when full;

a replacement spool is placed adjacent to said take-up spool in a direction of the spool axis; and

said fiber guiding unit travels over said replacement spool for laying the fiber bundle on said replacement spool.

25. The device according to claim 3, including:

a central data processing unit operatively connected to said compensating device;

said take-up spool having a spool axis and being configured as an exchangeable take-up spool to be exchanged when full;

a replacement spool being placed adjacent to said take-up spool in a direction of the spool axis such that, when said take-up spool is full, the fiber bundle changes from said take-up spool to said replacement spool; and

said central data processing unit controlling, via said compensating device, a rotational speed of said replacement spool by at least one of a closed-loop control and an open-loop control when the fiber bundle changes from said take-up spool to said replacement spool.

26. The device according to claim 1, wherein said drawing installation synchronously produces a plurality of individual multicomponent optical fibers.

27. A method for making up a plurality of optical fibers, the method which comprises:

synchronously producing, with a drawing installation, a plurality of individual optical fibers by drawing the optical fibers with a drawing rate substantially constant and identical for each of the optical fibers;

coating the optical fibers with size;

bundling the optical fibers to form a fiber bundle;

passing the fiber bundle, via deflecting devices, to a take-up winder; and

compensating, with a compensating device, for differences in speed of the fiber bundle between the drawing installation and the take-up winder.

28. The method according to claim 27, which comprises:

guiding the fiber bundle over a deflection roller of a dancing arm; and

compensating, with a speed controller, for changes in a take-up rate of the fiber bundle on a take-up spool by using data provided by an angular resolver assigned to the dancing arm and changing a rotational speed of the take-up spool.

29. The method according to claim 27, which comprises:

guiding the fiber bundle over a deflection roller of a dancing arm; and

transmitting, to a speed controller, a signal corresponding to a neutral position of the dancing arm in order to stop the take-up winder.

30. The method according to claim 27, which comprises passing the individual optical fibers as a band over at least one

sizing roller of the drawing installation in order to provide a constant tensile stress.

31. The method according to claim 27, which comprises:

drawing the individual optical fibers all together, with a same drawing rate in each case, by using a drawing-off roller; and

passing, via a secondary roller, the optical fibers as a fiber bundle to the take-up winder.

32. The method according to claim 27, which comprises winding, via a guiding roller, the fiber bundle layer by layer on a take-up spool of the take-up winder by using a fiber guiding unit for displacing the fiber bundle on the take-up spool.

33. The method according to claim 32, which comprises winding the fiber bundle on the take-up spool with an adjustable offset per layer.

34. The method according to claim 33, which comprises setting the adjustable offset based on an adjustable ratio of a number of excursions of a fiber guide of the fiber guiding unit to a rotational speed of the take-up winder.

35. The method according to claim 27, which comprises:

providing a fiber guiding unit having a controllable excursion mechanism and a fiber guide with a guiding roller; and

laying the optical fibers in a precise manner over a take-up spool of the take-up winder by using the controllable excursion mechanism and moving the fiber guide with the guiding roller cyclically back and forth parallel to a longitudinal axis of the take-up spool.

36. The method according to claim 35, which comprises symmetrically shortening a winding width of fiber layers on the take-up spool in dependence on a total number of fiber layers by reducing an excursion of the fiber guide on both sides of the take-up spool.

37. The method according to claim 27, which comprises ensuring a substantially constant distance between a guiding roller of a fiber guide and an uppermost layer on a take-up spool by moving, with a controllable excursion mechanism, the fiber guide with the guiding roller continuously radially with respect to an axis of rotation of the take-up spool.

38. The method according to claim 37, which comprises continuously adapting a fiber guiding unit including the fiber guide and the controllable excursion mechanism to a wound-up radius changing in dependence on a total number of layers on the take-up spool.

39. The method according to claim 27, which comprises exchanging a full take-up spool with a replacement spool by placing the replacement spool adjacent to the full take-up spool in a direction along a spool axis of the full take-up spool.

40. The method according to claim 39, which comprises moving a fiber guiding unit over the replacement spool when exchanging the full take-up spool.

41. The method according to claim 40, which comprises using a traveling table for moving the fiber guiding unit over the replacement spool when exchanging the full take-up spool.

42. The method according to claim 39, which comprises moving the replacement spool under a fiber guiding unit and simultaneously displacing the full take-up spool when exchanging the full take-up spool.